

# **CW3E Atmospheric River Outlook: 03 June 2022**

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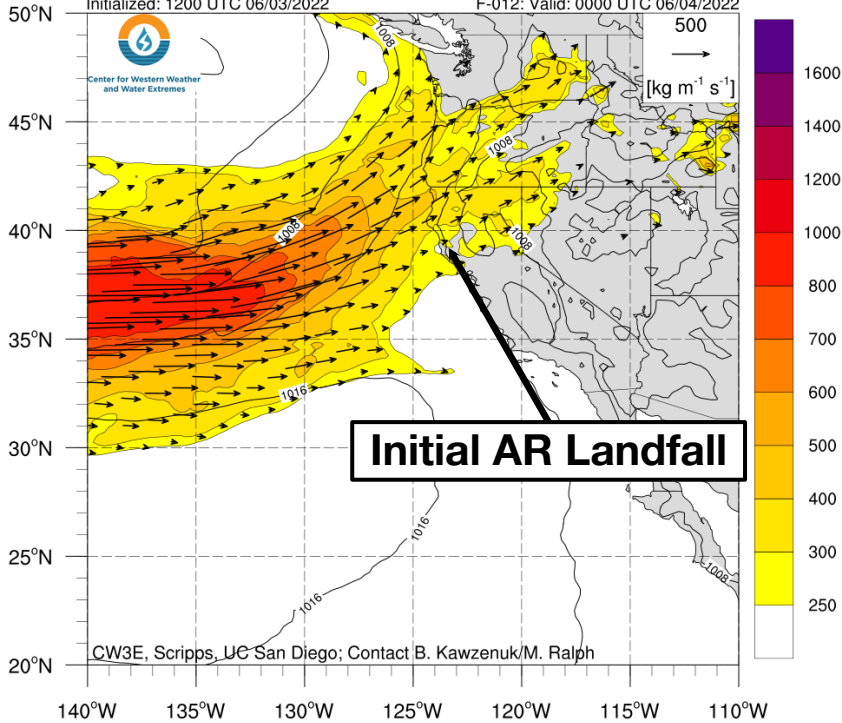
## **Atmospheric River to Bring Precipitation to Portions of Northern California and Oregon**

- An atmospheric river of intensity AR3 on the Ralph et al. (2019) AR scale is forecast to make landfall along the coast of Northern California and Oregon.**
- The AR will initially make landfall in Oregon, then slide down the coast and eventually dissipate over Northern California over the next three days.**
- This event will primarily bring precipitation to the higher elevations over far Northern California, western Oregon, and western Washington, with more than 3 inches possible in some areas.**
- Compared to the 12Z GFS, the 12Z ECMWF is forecasting higher precipitation totals over the 3-day event in the Northern California Coast Ranges and southern Cascades in Oregon.**
- Precipitation associated with this AR3 has been classified by the NWS WPC within the Excessive Rainfall Outlook, which highlights a marginal risk of flash flooding to occur in the region of this event.**
- This AR will bring much needed late-season precipitation to regions currently experiencing Extreme/Severe drought conditions, with the added benefit of reduced wildfire conditions for a short period of time.**
- High intensity AR3 events are frequent this time of year. For example, in Bodega Bay (North of San Francisco), between 1980 to 2017 there were only ~25 days with AR3 conditions during the month of June.**

## GFS IVT & SLP Forecasts

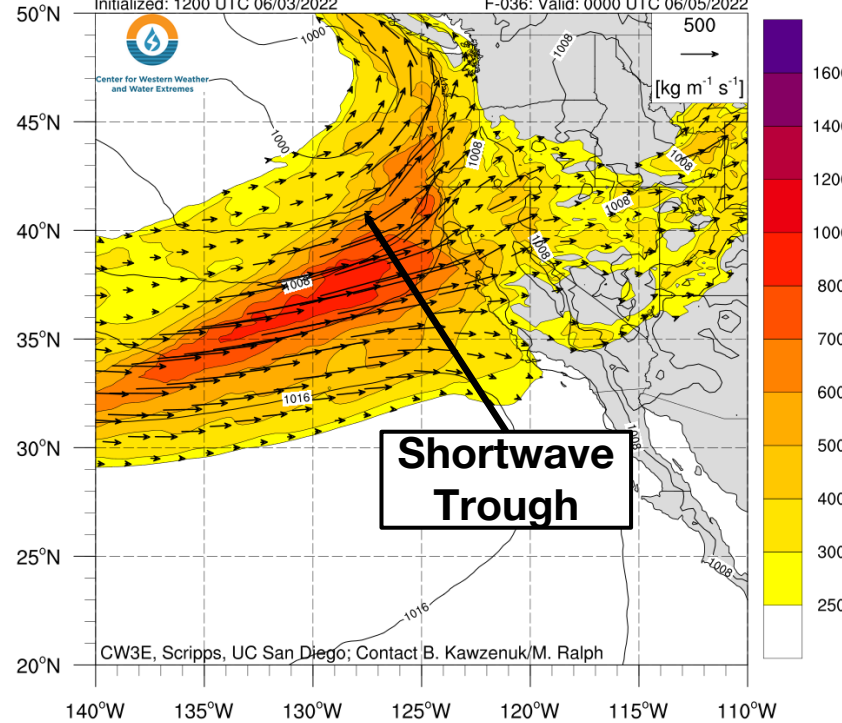
(a) Valid: 5 PM PT 3 June (F-12)

NCEP GFS IVT ( $\text{kg m}^{-1} \text{s}^{-1}$ ; shaded), IVT Vector, and SLP (hPa; contours)  
Initialized: 1200 UTC 06/03/2022 F-012: Valid: 0000 UTC 06/04/2022



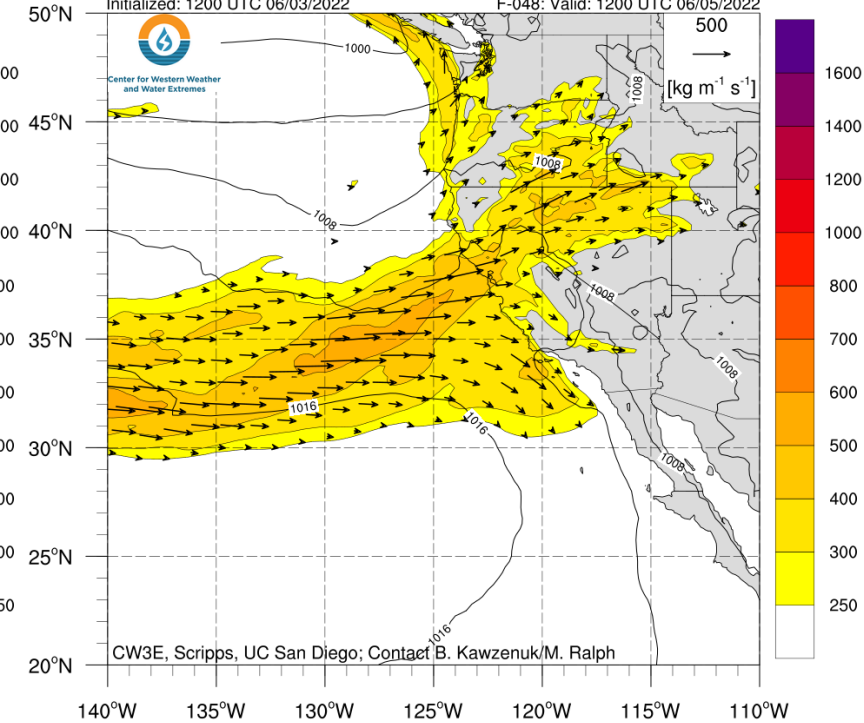
(b) Valid: 5 PM PT 4 June (F-36)

NCEP GFS IVT ( $\text{kg m}^{-1} \text{s}^{-1}$ ; shaded), IVT Vector, and SLP (hPa; contours)  
Initialized: 1200 UTC 06/03/2022 F-036: Valid: 0000 UTC 06/05/2022



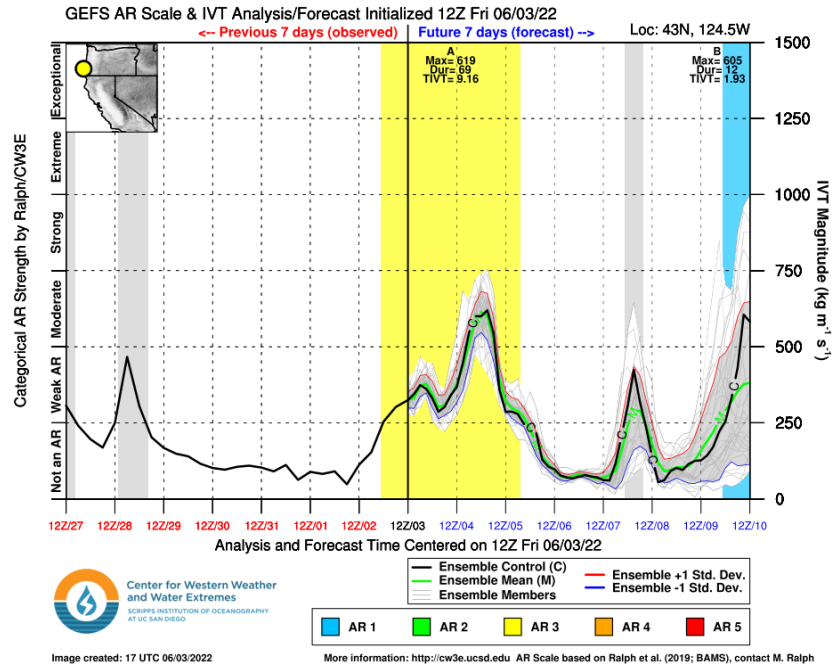
(c) Valid: 5 AM PT 06 June (F-48)

NCEP GFS IVT ( $\text{kg m}^{-1} \text{s}^{-1}$ ; shaded), IVT Vector, and SLP (hPa; contours)  
Initialized: 1200 UTC 06/03/2022 F-048: Valid: 1200 UTC 06/05/2022

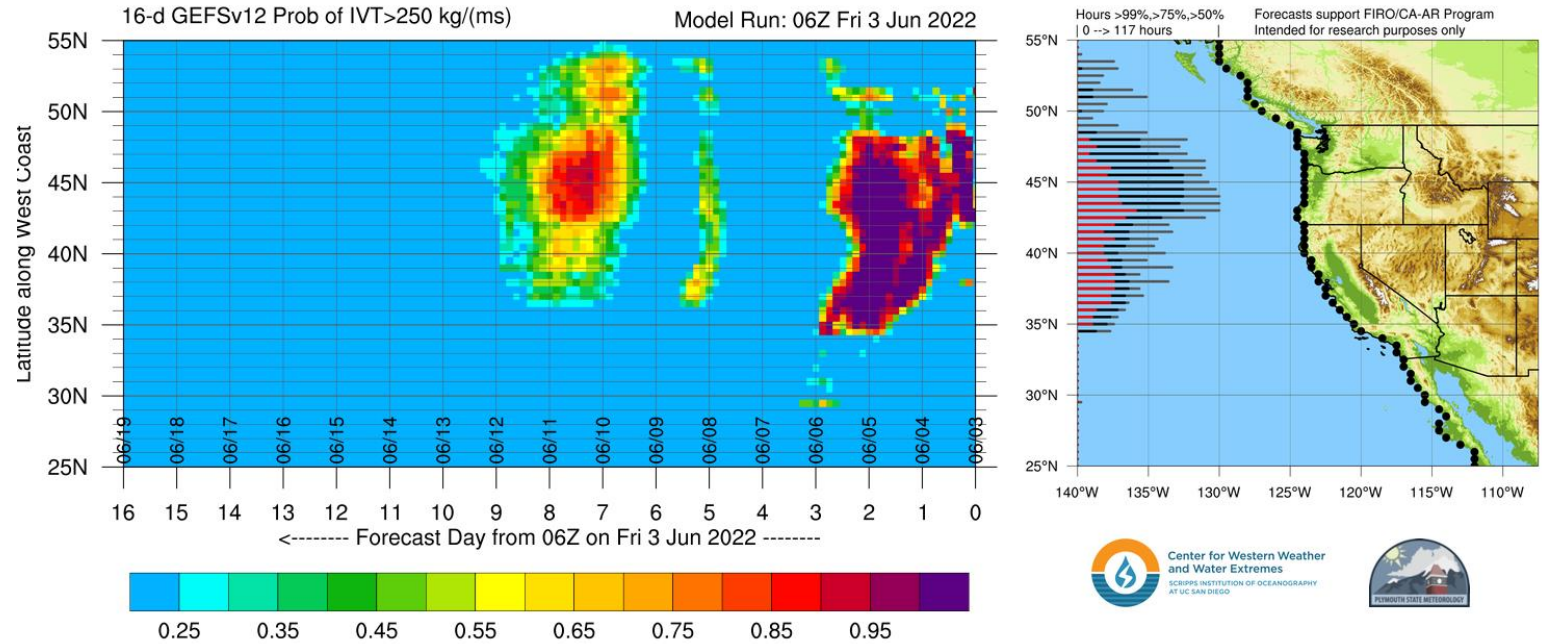


- The primary IVT core of the AR is forecast to make initial landfall along the coast of Oregon (Fig. a) this afternoon.
- The period of strongest landfalling IVT  $> 500 \text{ kg/ms}$  will occur tomorrow afternoon, associated with a shortwave trough situated to the north of the primary core of IVT (Fig. b).
- As the AR makes landfall, the primary IVT core will shift south and dissipate over northern California (Fig. c).

a) GEFS AR Scale & IVT Initialized 12Z 06/03/22

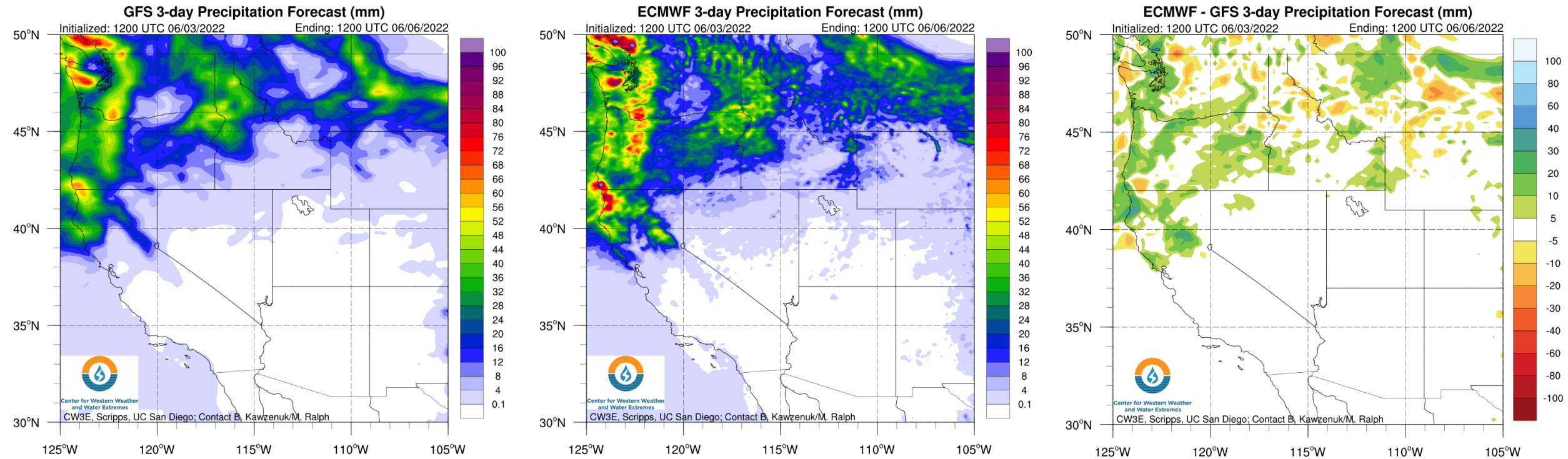


b) Probability of AR Conditions (IVT > 250 kg/ms) Along Coast (GEFS)



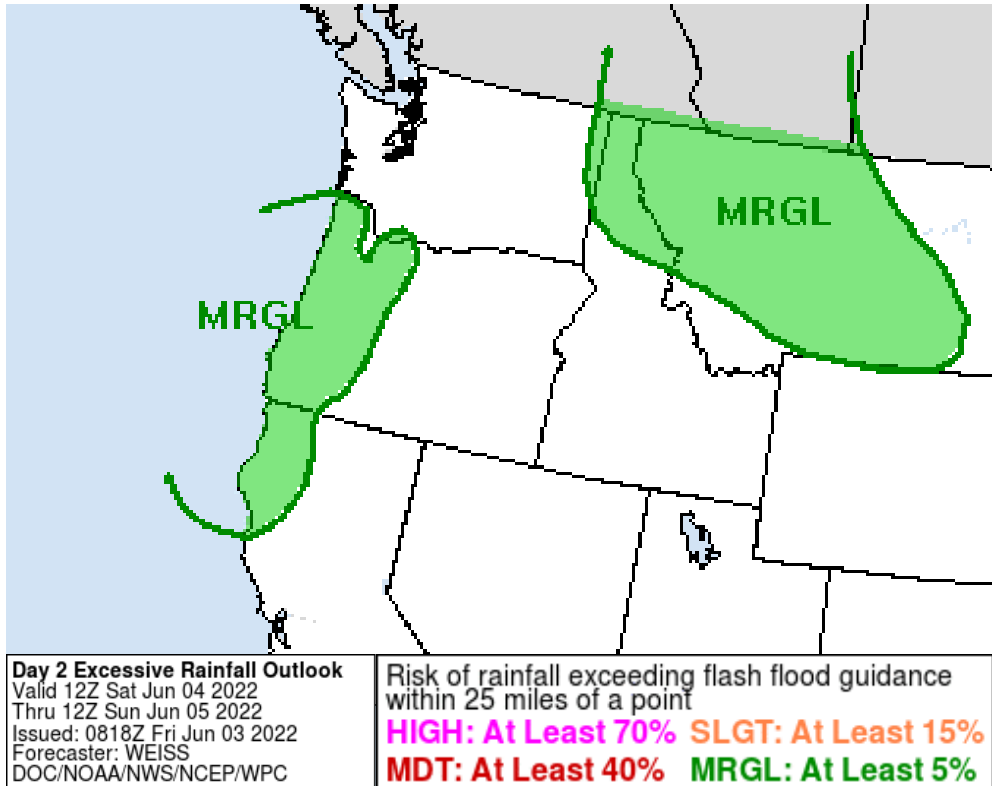
- The 12Z GEFS control forecast for 43.0N, 124.5W (coastal southern Oregon) indicates an AR3 event (based on the Ralph et al. 2019 AR scale), with AR conditions persistent over a 69-hour period with a maximum IVT of 619 kg m<sup>-1</sup> s<sup>-1</sup> (Fig. a).
- The 06Z GEFS shows very high confidence (> 95% probability) of AR conditions (IVT > 250 kg m<sup>-1</sup> s<sup>-1</sup>) along coastal Northern California and Oregon between 06Z 6/03 – 06Z 6/06 (Fig. b).

## Model QPF: GFS vs. ECMWF



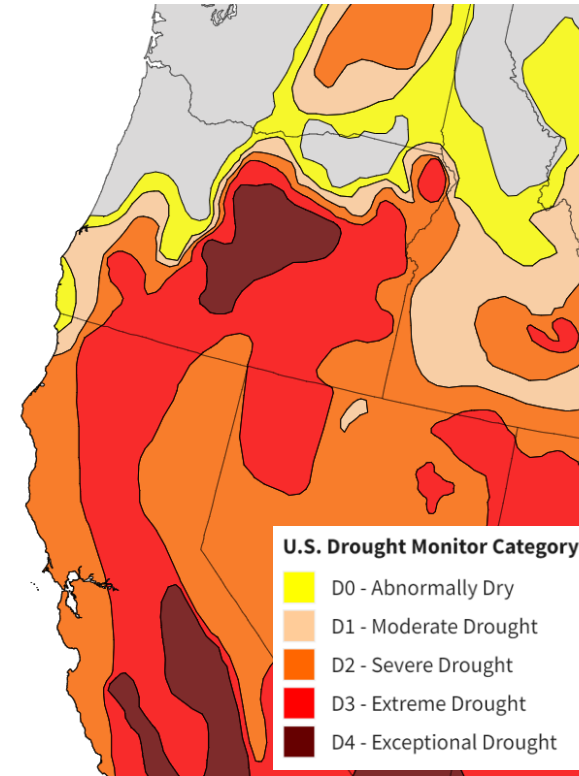
- Global model 3-day QPF differences show the ECMWF forecasting higher precipitation totals compared to the GFS over a majority of the higher elevations of Northern California, Oregon, and Washington.
- Compared to the 12Z GFS, the 12Z ECMWF is forecasting higher precipitation totals of > 3 inches along the coastal ranges on the border of Oregon and California, and > 2 inches in the southern Cascades.
- 3-day QPF differences between the models are nearly 1 inch over the Oregon/California border and 0.5 inch the high elevations of the southern Cascades.

## a) NWS WPC Excessive Rainfall Outlook



Source: NOAA/NWS WPC Excessive Rainfall Outlook

## b) US Drought Monitor



Source: NOAA/NIDIS Drought.gov

- The NWS Weather Prediction Center has issued a marginal risk for excessive rainfall exceeding flash flood guidance in northern California and Oregon for the precipitation associated with this AR (Fig. a)
- Precipitation associated with this AR will occur in areas of CA/OR currently experiencing Severe and Extreme drought (Fig. b) although it is unlikely the precipitation will lead to any considerable drought amelioration in the region.